

# CONTINUOUS IMPROVEMENT PROJECT DATABASE

## DIVISION 13 PROJECTS

Project Name	Project Description	Division	Project Year	Contact Name	Contact Number	Project Category
Snow Plow Jack	<p>Problem: In the past when attaching and removing plows from the truck, employees were required to lift and strain with pry bars when performing this operation. Many employees suffered pinched fingers and the potential for back injuries was very high.</p> <p>Solution: Employees at the McDowell County Maintenance shop decided that the solution was to attach jacks to the side of the plow to adjust the plow to the correct height to attach and detach it.</p>	Operations Division 13	2007	Donnie Dockery	(828) 652-4024	Safety Improvement
Customized Phone Log	<p>Problem: The Division Traffic Engineering Office typically receives an enormous number of phone calls. Sometimes as many as 20 to 30 customers contact the Division Traffic Engineer (DTE) each day asking for speed limits, traffic signals, or other concerns. It has been a very cumbersome task for the DTE to record phone calls and forward tasks to his staff or other units.</p> <p>Solution: A phone log was developed to provide a quick "check box" type approach to recording and forwarding phone calls. The log captures the customer's name, phone number, nature of call, and county of origin. The log provides a check box list showing individuals who commonly receive forwarded messages from the DTE. The log also provides a check box list to indicate if the phone call was a returned call, from voice mail, from email, and if a message was left or if the customer was spoken to. Recently the customized phone log was modified to fit within the popular Covey Planner that many NCDOT employees are using.</p>	Operations - Division 13	2006	Mark Teague	(828) 251-6171	Customer Service
Skid Steer GR Blade	<p>Our crew has the task of removing soil and debris from underneath the guardrail so water could sheet flow off the roadway. In the past, this task had to be done with a motor grader or manpower and shovels. This process was very time consuming and labor intensive. In order to save time, we designed a blade apparatus that fits on the fork of a skid steer loader. The device allows the operator to push the material out from under the guardrail and off the slope and enable a backhoe or force feed loader to pick it up. This device saves labor hours.</p>	Operations- Division 13	2005	Gabriel Johnson	(828) 625-4024	Labor Hour Savings
Guardrail Placement Rating System	<p>With limited funding available, a fair and efficient system for evaluating the locations that warrant the installation of guardrail was needed. An unfunded need list was in existence that contained projects that were several years old. It was very difficult to determine the priority of a project in order to maximize the limited funding available.</p> <p>The team included NCDOT engineers as well as a lieutenant from the State Highway Patrol and a county commissioner. All members had a stake in the placement of guardrail. To determine opinions on the current method of guardrail placement, a questionnaire was completed. This established a baseline from which to work. It was determined that there was no standardized guardrail priority system. The team determined items to consider and ranked them in order of importance. Point values were then assigned to each of the factors considered.</p>	OPERATIONS - DIVISION 13	2002	Mark Teague	(828) 251-6171.	Customer Service
Truck Mounted Snow Plow Lift Arm Extension Bracket	<p>The existing truck mounted snowplow lift arms did not lift the blades high enough. It was decided that an extension bracket on the lift arm could be fabricated and installed to allow the blade to be lifted to a greater height. The extension is cut out of a piece of steel stock and welded together. It is bolted on the existing lift arm rather than welded, so that it can be removed when necessary</p>	OPERATIONS - DIVISION 13	2002	Jerry Murray	(828) 298-0692	Customer Service
Steel Pipe Installation	<p>Replacement of a deteriorated 92" pipes culvert. This pipe had approximately 60' of fill. Replacement cost would be extremely high, because of fill removal, excavation size and location with other highways. Three private driveways would have been cut due to excavation, as well as expensive engineered retaining/shoring system installed, because of the depth of full and close proximity of a major highway next to the project.</p>	OPERATIONS - DIVISION 13	2002	Ken Anderson	(828) 298-1128.	Dollar Savings
Reuse of Clipped-off ABC Scheduled for Discarding	<p>On this major interstate highway construction project, the project plans and special provisions indicated that a nominal 2 of the existing 12 aggregate base course layer was to be clipped off to establish the subgrade, and the remaining 10 layer is to be conditioned. The 2 clipped off material was to be discarded. The plans also indicated that a quantity of 60,600 tons of ABC was to be hauled to the site from the quarry to construct finished ABC shoulders, median, and rest area ramp base course.</p>	OPERATIONS - DIVISION 13	2002	Stan Hyatt	(828) 251-6171.	Dollar Savings

Asphalt Distributor Hose Upgrade	was 2 months. When the hose began to fail, a new one had to be special ordered. Delivery times were about two weeks, and cost was over \$900.00. In order to install the new hose, the pump had to be removed and four new gaskets installed. This took an average of 5-6 hours of labor. New gaskets were about \$10.00 each. The decision was made to modify the plumbing of the asphalt distributor to accept a common hose that was carried in inventory by the local contract supplier. The modification was performed by removing the existing coupling and welding an elbow to the pipe. Four permanently mounted hose swivel couplings were added at a cost of \$35.00 each, eliminating the need for gaskets. Total change of hoses now takes less than one hour. The new hoses cost less than \$400.00 for the pair.	OPERATIONS - DIVISION 13	2002	Jerry Murray	(828) 298-0220	Dollar Savings
Bituminous Treatment/Retreatments Field Record Form	The process of keeping records of the bituminous treatment of roads was cumbersome due to the forms involved. The forms had to be clipped together with paperclips, with carbon paper in between. This was difficult to do, and not very reliable. The forms were hard to keep properly lined up so that the carbon was in the proper position to make the copy. The carbon paper was very messy, and also difficult to keep in the correct position	OPERATIONS - DIVISION 13	2002	Ken Putnam	(828) 251-6171	Environmental Sustainability
Truck Mounted Impact Attenuator Cab Mounted Controls	The Roadside Environmental Unit conducts many slow-moving spraying operations on multilane primary and interstate highways. A caravan of four vehicles is used for the operation, one of which is a protection vehicle with a truck mounted impact attenuator. To begin operations, the entire caravan needs to find a safe place to pull off of the road so that the operator of the protection vehicle can lower the impact attenuator. This takes approximately 15 minutes, and the operator has to exit the cab of the truck, walk to the rear of the truck, and stand between the impact attenuator and the rear of the truck. This is necessary because of the location of the switches and indicator lights. Throughout this procedure, the operator is exposed to dangerous high-speed traffic.	OPERATIONS - DIVISION 13	2002	Keith Hill	(828) 251-6253.	Safety Improvement
Concrete Deck Patching	The use of Duracal Quickset in concrete deck patching requires demolition of potholes. It is water-based, cannot be used below 32 degrees, cracks during curing, has long set-up and drying times, and durability is usually less than one year. In order to improve the process of patching potholes, the McDowell Bridge Maintenance used a magnesium and ammonia-based product called MG KRETE to repair three decks. This product sets-up four times faster, does not require demolition, does not freeze or crack, can be used in below freezing temperatures, is less labor intensive and is very durable. The following is a comparison of labor hours for three bridge projects:	OPERATIONS DIVISION 13	2001	Ken Anderson	(828) 298-1128	Labor Hour Savings
Voice Activated Intercoms	In the erosion control operations, two pieces of equipment are used, the Hydroseeder and the mulch blower. The hydroseeder operator is on top of the vehicle and the mulch/straw blower operator is on a trailer that is being towed by a flatbed truck loaded with straw. The operators could not communicate with the individual driving the flatbed truck since the machines were so loud.  Division 13 Roadside Environment office purchased voice activated intercoms and headsets to aid workers in communication during the erosion control operations. The vehicle driver is able to alert the hydroseeder and mulch blower operators of low power/phone lines, tree limbs, traffic, etc. In addition, the operators can easily notify the driver if equipment has malfunctioned, or to slow down, stop or speed up.	OPERATIONS DIVISION 13	2001	Keith Hill	(828) 2549590.	Safety Improvement
Paint Handling	Paint for pavement marking is currently supplied by the NC Corrections Enterprise in 30-gallon drums. It takes approximately one hour to unload the transfer truck with a six-person crew. Employees are exposed to strain, repetitive and crushing injuries. The barrels must be stored on one level, then loaded on a supply truck for use.  The paint team in Division 13 has proposed that NC Corrections Enterprises purchase or lease totes to contain paint. Totes are 300 to 400 gallons (replaces 10-15 drums) and are reusable and stackable. A forklift is required to lift these totes and one employee with a forklift can unload a supply truck in substantially less time, and load up the empty containers. They can be unloaded from the bottom, can be strapped to a supply truck bed and unloaded without moving, and they take up less space in storage and transit. These totes are in use by private paint contractors and are available for purchase or lease from several companies.	OPERATIONS DIVISION 13	2001	Jeff Moore	(828) 251-6250	Safety Improvement